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(54) **A LOCKING DEVICE FOR WEAPONS**

VERRIEGELUNGSVORRICHTUNG FÜR FEUERWAFFEN

DISPOSITIF DE VERROUILLAGE POUR ARMES A FEU

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Description

FIELD OF THE INVENTION AND PRIOR ART

[0001] The present invention relates to a locking device, preferably to be secured in the chamber or breach chamber of a weapon, and a key for co-operation with a locking device.

[0002] Weapons are frequently subjected to thefts and therefore there is a great demand for a locking device, which prevents an unauthorised person to use a stolen weapon. A locking device of this kind can be designed to block the chamber, the barrel or any other vital part of the weapon in that a lock member, comprised in the locking device, by a rotation of a lock cylinder is brought into a position, in which the locking device is secured to the weapon (this function is denominated "securing" hereinafter). The locking device can also be designed to damage any vital part of the weapon and in that way render the weapon unusable in that locking elements in the form of cutting edges, balls or the like, when attempts are being made to remove the locking device, are pressed into the material of the weapon part in question (this function is denominated "destructing" hereinafter). Locking devices with combined securing and destructing function also exist.

[0003] A locking device with a securing function is shown for instance in US 3 765 115 A. This locking device has a lock member rotatably arranged at the front end of the locking device, which lock member is connected with a lock cylinder via a pin attached to the lock cylinder, the lock member being manoeuvrable into a securing engagement in a slot in the breach chamber of the weapon by rotation of the lock cylinder. This locking device is very easy to manipulate, since the lock member is easily accessible by boring up the lock cylinder.

[0004] A locking device with a destructing function is for instance disclosed in SE 510096 C2, its content covers the preamble features of claim 1. This locking device comprises a friction body displaceably arranged in relation to a lock body and insertable into the barrel of the weapon, which friction body is designed to engage with an inside wall of the barrel with frictional effect at the introduction into the barrel. A number of cutting edges are arranged to be moved into engagement with the inside wall of the barrel in case of a mutual displacement between the friction body and the lock body. The locking device further comprises two blocking balls, which are movable between a blocking position, in which they engage with the friction body and prevent longitudinal displacement of the friction body in relation to the lock body, and a free position, in which they do not engage with the friction body and allow longitudinal displacement of the friction body in relation to the lock body. The locking device can be inserted into the chamber of the weapon until the friction body engages with the barrel, whereupon the blocking balls can be brought into the free position by a rotation of a lock cylinder carried out by a key.

Due to the frictional engagement of the friction body with the barrel, every displacement of the lock body caused by exterior influence will now result in a relative movement between the friction body and the lock body, which in its turn causes the cutting edges to be pressed outwards towards the barrel. A further displacement of the lock body in the barrel will result in that the cutting edges will be pressed into the barrel and will render the weapon unusable. This locking device lacks a securing function.

[0005] The locking device disclosed in SE 510096 furthermore has a lock shaft rotatably and displaceably mounted in the lock body, which lock shaft is rotatably connected with the lock cylinder of the locking device and is arranged to cause said blocking balls to be placed in the desired position, i.e. locking position or free position, in connection with a rotation of the lock cylinder. The lock shaft is preloaded against the lock cylinder by means of a spring in order to prevent a gap between them. The lock shaft is accessible and easily manipulable in case someone by boring or in any other way unduly manages to remove the lock cylinder from a locking device of this kind, which is secured in a weapon. When the lock cylinder is removed, the blocking balls can then be put into the blocking position via manipulation of the lock shaft, whereupon the entire locking device can be removed without damaging the weapon.

[0006] The cutting edges of the locking device according to SE 510096 are provided with an edge having its main extension in the axial direction of the locking device and consequently the edge will produce a cut extending in the axial direction of the barrel. These edges work satisfactory in weapons having a barrel with a smooth inner surface and a relatively small thickness of material. In such weapons, the edges will be pressed into the material of the barrel, whereby they secure the locking device in the barrel so that the barrel finally, when the force exerted on the locking device becomes large enough, will be bent and deformed. Some weapons have a chamber at the rear end of the barrel. At the chamber, the material thickness is normally larger than in the rest of the barrel. It is true that a locking device having axially directed edges can cause a certain damage to the inner wall of the chamber, but the relatively thick material in the chamber is able to resist the forces transferred via the locking device so well that the chamber and the barrel will not be deformed by bending. The axial cuts that are obtained in the chamber when the locking device is removed by force will not in a satisfactory manner guarantee that the weapon will become unusable.

SUMMARY OF THE INVENTION

[0007] A purpose of the present invention is to provide a locking device to be secured in a weapon, which locking device has a satisfactory destructing function as well as a satisfactory securing function.

[0008] According to the invention, this object is

achieved by means of a locking device according to claim 1. In this locking device, a locking means is manoeuvrable by means of a lock cylinder comprised in the locking device into a securing engagement in a space located adjacent to the chamber or barrel of the weapon. In this locking device, a locking means having a destructing function is also manoeuvrable by means of the same lock cylinder. In the locking device according to the invention, a locking means having a destructing function is in a constructionally efficient manner combined with a locking means having a securing function, in the same time as a relatively rational and cost-effective manufacturing thereof can be achieved.

[0009] According to a preferred embodiment of the invention, a rotary motion of the lock cylinder is transferred into a movement of the second locking means via the envelope surface of a cylinder-shaped wall of the locking cylinder. In this way the locking means can be arranged at the part of the lock body that surrounds the lock cylinder, whereby the lock body can have a relatively short axial extension, which can be suitable from a security point of view since the smaller part of the locking device protruding from the space in the weapon in which the locking device is intended to be secured, the more difficult it will be to unduly manipulate the locking device.

[0010] According to a further embodiment of the invention, said rotary motion is transferred via a recess in the envelope surface of the cylinder-shaped wall. In this way a well functioning transfer of motion is achieved in a simple way, at the same time as the lock cylinder comprised in the locking device can be manufactured in a simple and cost-effective way and be easily mounted in the lock body.

[0011] Further advantageous features of the invention are dealt with in the following description and the rest of the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] With reference to the enclosed drawings, the invention will hereinbelow be more specifically described by means of embodiment examples. It is shown in:

- Fig 1 in a perspective view, a locking device according to an embodiment of the invention,
- Fig 2 in a sectional view, the locking device according to Fig 1,
- Fig 3 a vertical cut through the front end of the locking device according to Fig 1,
- Fig 4 a horizontal cut through the locking device part according to Fig 3,
- Fig 5 in a perspective view, the locking device part

according to Fig 4,

- Fig 6 in a perspective view, a front lock body part comprised in the locking device according to Fig 1,
- Fig 7 a vertical cut through the lock body part according to Fig 6,
- Fig 8 in a perspective view, a lock shaft comprised in the locking device according to Fig 1,
- Fig 9 in a perspective view, a blocking element comprised in the locking device according to Fig 1,
- Fig 10 in a perspective view, a blocking device comprised in the locking device according to Fig 1,
- Fig 11 in a perspective view, a spring element comprised in the locking device according to Fig 1,
- Fig 12 a cut through a centre part of the locking device according to Fig 1,
- Fig 13 a cut through the centre part according to Fig 12 with a key blank inserted into it,
- Fig 14 in a perspective view, a lock cylinder comprised in the locking device according to Fig 1,
- Fig 15 in a perspective view, a central lock body part comprised in the locking device according to Fig 1,
- Fig 16 a vertical cut through the central lock body part according to Fig 15 and a rear lock body part and a lock element connected with it,
- Fig 17 a horizontal cut through the parts according to Fig 16,
- Fig 18 in a perspective view, the locking element according to Fig 16 and 17,
- Fig 19 in a perspective view, the key unit comprised in the locking device according to Fig 1,
- Fig 20 a vertical cut through the key unit according to Fig 19, and
- Fig 21 in a perspective view, a key shaft comprised in the key unit according to Fig 19 and 20.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0013] The locking device shown in Fig 1 and Fig 2

comprises a lock unit 1 and a key unit 2. The lock unit 1 according to the shown embodiment is adapted to be secured in a weapon of the type HK G3, but within the scope of the idea of the invention it can be modified for use also with other types of weapons. The lock unit 1 is intended to be inserted and secured in a space in the weapon, which space is designed to receive the front part of the breach block or breach block head, this space is denominated breach chamber in the following. In a weapon of the type HK G3 the breach chamber has a seat for receiving lock rolls, which lock rolls can be moved into and out of engagement with said seat in order to secure and release, respectively, the breach block head and the breach block connected to the breach block head. The lock unit 1 comprises a lock body having a front lock body part 3, a central lock body part 4 and a rear lock body part 5. The front lock body part 3 is designed for insertion into the chamber of the weapon and the central lock body part 4 is designed for insertion into the breach chamber. When the locking device has been put in place in the weapon, the front lock body part 3 is consequently situated in the chamber, whereas the central lock body part 4 is situated in the breach chamber, the front end 6 of the central lock body part 4 abutting against a front part of the breach chamber. In this position, the front end 7 of the rear lock body part 5 abuts against a section of the weapon, which section surrounds an opening leading to the breach chamber. When the lock unit 1 is in this position, it can be manoeuvred into a securing engagement with the weapon by means of the key unit 2, which will be more closely described in the following.

[0014] As can be seen from Fig 3, the front lock body part 3 has an inner cavity 8, in which a lock shaft 9 is displaceably and rotatably arranged. The lock body part 3 is at its central section surrounded by a sleeve-shaped friction body 10, which is mounted to the lock body part 3. The design of this friction body clearly appears from Fig 5. At its rear end, the friction body 10 abuts against a shoulder 18 of the lock body part 3. The friction body 10 is designed to be insertable into the chamber with friction fit and has at its rear section a number of sleeve parts 12 laterally separated by axially extending slots 11. When these sleeve parts 12 are in there unaffected state, i.e. when the front lock body part 3 is not inserted into the chamber, there is a free space 13 in the radial direction between the sleeve parts 12 and the lock body part 3. In this unaffected state, the rear slotted section of the friction body 10 has an outside diameter that is larger than the inside diameter of the chamber, whereas the front section 14 of the friction body 10 has an outside diameter that is slightly smaller than the inside diameter of the chamber. When the front lock body part 3 is displaced into the chamber, the sleeve parts 12 will consequently be pressed inwards by the inner wall of the chamber, whereby they by their own spring effect will exert a radially directed pressure force against said wall. In order to facilitate the insertion of the friction body 10

in the chamber, the sleeve parts 12 are designed with a bevel cutting 15. As an alternative to the springing sleeve parts 12, the friction body 10 could also be provided with one or several O-rings for achievement of the desired retaining frictional effect between the friction body 10 and the wall of the chamber.

[0015] The friction body 10 has a ring-shaped slot 16 at its inner surface, which slot is connected to two holes 17 arranged on opposite sides of the lock body part 3, which holes 17 extend from the outside of the lock body part and into the cavity 8. Each hole 17 is designed to receive a blocking member in the form of a blocking ball 19. These blocking balls 19 are displaceable in the holes 17 by means of the lock shaft 9, whereby they can be moved into and out of engagement with the slot 16 in the friction body 10. At its front end, the lock shaft 9 is provided with two recesses 20 for receiving the blocking balls 19, which recesses are arranged at opposite sides of the lock shaft 9. When the lock shaft 9 is in the rotary position shown in Fig 3, the blocking balls 19 are received in the recesses 20 of the lock shaft, whereby the blocking balls 19 do not engage in the slot 16 of the friction body. Consequently, in this position a mutual axial displacement between the friction body 10 and the lock body part 3 is possible. When the lock shaft 9 is rotated 90° from the position shown in Fig 3, the lock shaft 9 will, via the lock shaft section 21 situated between the recesses 20, press the blocking balls 19 radially outwards so that they will come into engagement with the slot 16 of the friction body. In this position, the blocking balls 19 prevent a mutual axial displacement between the friction body 10 and the lock body part 3.

[0016] The lock body part 3 has a cone-shaped section 22 at its front end, which section widens in the direction forwards. A number of blocking elements 23 are arranged to surround this cone-shaped section 22. The design of the blocking elements clearly appears from Fig 9. The blocking elements 23 have an underside 24, via which the blocking elements 23 slideably abut against the cone-shaped section 22 of the lock body part. The blocking elements 23 furthermore have a rear wall 25, via which the blocking elements 23 abut against a shoulder 26 of the lock body part 3, which shoulder is arranged in connection to the cone-shaped section 22, and against the forward-directed edges 27 of the recesses 28 arranged in the front part of the friction body 10, as can be seen from Fig 4 and Fig 5. Each of the recesses 28 of the friction body is designed to receive the rear part of a blocking element 23 in such a way that the blocking element 23 is kept in place laterally but can be displaced in radial a direction in relation to the friction body 10. The blocking elements 23 have at their upper rear edge a cutting edge 29 extending in the cross-direction of the blocking element. A recess 29a extending below and along the cutting edge 29 is arranged in the rear wall 25 of the blocking element. This recess 29a is designed to allow removal of material cut by the cutting edge 29 when the cutting edge comes into engagement

with and is displaced along the inner wall of the chamber. The blocking element 23 has at its front end a recess 30, which also extends in the cross-direction. By means of at least one rubber ring, not shown, which surrounds the lock body part 3 and is received in the slot 30 of the blocking element, the blocking element 23 is retained against the cone-shaped section 22 of the lock body part. The lock body part 3 is provided with a thread pin 31 at its front end, onto which a cone 33 having a hole with an internal thread is screwed. The envelope surface of the cone forms an extension of the cone-shaped surface 22 of the lock body part. A recess for receiving a ball 35 of hard metal material is arranged at the front end of the cone 33.

[0017] In the shown example, the cutting edges 29 of the blocking elements have their main extension in a direction being essentially perpendicular to the axial direction of the locking device, and they are consequently arranged to come into engagement with the inner surface of the chamber wall along a section of the wall surface that has a main extension in a direction being essentially perpendicular to the axial direction of the locking device. However, the cutting edge 29 could also be arranged in another angle in relation to the axial direction of the locking device. The essential thing is that the cutting edge 29 has its main extension in a direction forming an angle with the axial direction of the locking device and is arranged to come into engagement with the surface of the wall along a section of the wall surface that has a main extension in a direction forming an angle with the axial direction of the locking device. In this way, it is avoided that the blocking elements only causes simple and insufficiently destructing axial cuts in the wall of the chamber. Said angle with the axial direction of the locking device is suitably 45-90°, preferably 60-90° and particularly preferably 75-90°.

[0018] The locking shaft 9 has a rear end section 36 via which the lock shaft 9 under the action of a spring element 39 preloaded abuts against a lock cylinder 40 arranged in the central lock body part 4, which will be more closely described in the following. In the example shown, said spring element consists of a helical spring 39 arranged between a shoulder 37 of the lock shaft 9 and a shoulder 38 in the cavity 8 of the lock body part. The shoulder 37 of the lock shaft is formed by a lock shaft section 68 having a larger outside diameter than the part of the lock shaft 9 in front. The rear end section 36 is connected to this lock shaft section 68, the rear end section 36 in its turn having a larger outside diameter than the lock shaft section 68 in front. The rear end section 36 is via a front surface 69 of the same abutting against a rear end surface 70 of the lock body part 3. The rear end section 36 furthermore has a recess 47 for receiving a ball 48 of hard metal material.

[0019] A blocking device 41 in the form of a pin is displaceably arranged in a radially directed hole 42 in the front lock body part 3. The blocking pin 41 is shown in detail in Fig 10. In a first lock shaft position, shown in

Fig 3, the blocking pin 41 abuts under the action of a spring element 43 preloaded with its underside against the lock shaft 9 in such a way that the blocking pin 41 will not prevent an axial displacement of the lock shaft 9 in relation to the lock body part 3. In the shown example, said spring element consists of a circlip 43, which is shown in detail in Fig 11. The circlip 43 is received in a ring-shaped slot 44 in the lock body part 3 and is retained in place against the blocking pin 41 by means of a recess 43a arranged in the circlip 43, which recess receives a male-shaped section 45 arranged at the upper side of the blocking pin. The lock shaft 9 has a ring-shaped slot 46 for receiving the blocking pin 41 in a second lock shaft position.

[0020] If the rear end section 36 of the lock shaft 9 is released by unduly manipulation of the locking device, the lock shaft 9 will under the action of the helical spring 39 be displaced in the direction backwards from the position shown in Fig 3 until the slot 46 of the lock shaft ends up right before the hole 42 in the lock body part, whereupon the blocking pin under the action of the spring element 43 is pressed into the slot 46 and secures the lock shaft 9. In the latter blocked position the lock shaft 9 is prevented from axial displacement forwards as well as backwards in relation to the lock body part 3. In this position the lock shaft 9 has been displaced so far backwards from the original position shown in Fig 3 that the forward recesses 20 of the lock shaft 9 no longer are on a level with the holes 17 of the lock body part 3, which holes receive the blocking balls 19. Therefor, the blocking balls 19 will fall towards the centre of the cavity 8 and can no longer be brought into engagement with the friction body 10 via a rotation of the lock shaft 9.

[0021] The front lock body part 3 has at its rear end a ring-shaped slot 49 for receiving a lock ring 50, which lock ring 50 by engagement with said slot 49 and a ring-shaped slot 51 arranged in the central lock body part 4 secures the front lock body part 3 to the central lock body part 4, as can be seen from Fig 12. The rear end of the front lock body part 3 furthermore has a hole 52, within which a lock pin 53 is arranged. The lock pin 53 engages with a recess 54 arranged in the central lock body part 4 so as to prevent a rotation of the front lock body part 3 in relation to the central lock body part 4.

[0022] The central lock body part 4 has a cavity 55, within which a lock cylinder 56 is rotatably arranged. The lock cylinder 56 has a cylinder-shaped wall 57 and an end wall 58 arranged at the front end of the cylinder-shaped wall 57. In a cavity in the lock cylinder 56, which cavity is delimited by the cylinder-shaped wall 57 and the end wall 58, a number of lock discs are rotatably arranged. The forward lock disc 59 abuts against the end wall 58 and the rear lock disc 60 abuts, together with the rear end of the cylinder-shaped wall 57, against a shoulder 61 in the cavity 55 of the lock body part. The end wall 58 has, as can be seen from Fig 14, an opening 62 extending through the end wall 58. The opening 62

has a circular section 63, which is designed for receiving the forward semi-circular end of a key blank 96 comprised in the key unit 2, and two "ears" 65 arranged opposite each other, which are designed for receiving two legs 66 arranged at the rear section 36 of the lock shaft and extending in an axial direction. The legs 66 extend through the opening 62 and abut with their respective rear end against the forward lock disc 59, as can be seen from Fig 12. Via these legs 36, which are extending through the opening 62 of the end wall, the lock shaft 9 consequently abuts against the forward lock disc 59. The lock shaft 9 is herewith exerting a pressing force against this lock disc 59 under the action of the previously mentioned spring element 39. In Fig 13, the key blank 96 is shown fully inserted into the lock cylinder 56, in which position the front end of the key blank is received in a space 67 between the two legs 66.

[0023] If the lock discs 59, 60, due to unduly manipulation of the locking device, no longer is able to resist the pressing force from the lock shaft 9, the lock shaft 9 will under the action of the spring element 39 push the lock discs backwards, i.e. to the left in Fig 12. Consequently, the lock shaft 9 will be displaced a distance in through the opening 62 in the end wall 58 of the lock cylinder, until the lock shaft 9 ends up in the displacement position in which the blocking pin 41, as previously described, engages with the slot 46 of the lock shaft and prevents further displacement of the lock shaft 9 in relation to the lock body.

[0024] In Fig 15, the central lock body part 4 is shown in detail in a perspective view, and in Fig 16, the central lock body part 4 and the rear lock body part 5 connected thereto are shown in an axial cut. The central lock body part 4 has a rear cylinder-shaped section 71 provided with an external thread, via which section the central lock body part 4 is screwed into a cavity 72 in the rear lock body part 5, which cavity has an internal thread. A ring-shaped lock element 73 is rotatably mounted in such a way that it surrounds a cylinder-shaped central section 80 of the central lock body part 4. The front end of the lock element abuts against a shoulder 74 of the central lock body part 4 and its rear end abuts against a shoulder 75 of the rear lock body part 5. Consequently, these shoulders 74, 75 prevent axial displacement of the lock element 73. The design of the lock element appears in closer detail from Fig 16. The lock element 73 has lock heads 76, 77, which in a first rotary position of the lock element 73 in relation to the lock body allow the introduction of the central lock body part 4 into the breach chamber and removal of the same therefrom, and in a second rotary position, when the central lock body part 4 is situated within the breach chamber, come into engagement with the inside surface of the breach chamber. In said second rotary position, the central lock body part 4 is, due to the engagement of the lock heads in the breach chamber, prevented from being removed and the lock unit 1 is thereby secured in the weapon.

[0025] A carrier member 78 is attached to the lock el-

ement 73. In the example shown, the carrier member consists of a threaded pin 78, which is screwed into a threaded hole in the lock element 73, as can be seen from Fig 16. The carrier pin 78 extends into the lock cylinder 56 receiving cavity 55 via a through recess 79 in the wall of the central lock body part 4. The recess 79 has an extension along the periphery of the cylinder-shaped section 80 corresponding to approximately an eighth part of the circumference of the section plus the diameter of the carrier pin. The lower part of the carrier pin 78 protrudes into a recess 81 in the envelope surface of the cylinder-shaped wall 57 of the lock cylinder. The design of the recess appears from Fig 14. This recess 81 has an extension along the envelope surface of the cylinder-shaped wall 57 corresponding to approximately an eighth part of the circumference of the lock cylinder plus the diameter of the carrier pin, and is delimited in the rotational direction of the lock cylinder by two edges 82, 83 of the cylinder-shaped wall. When the lock cylinder 56 is rotated, one of the edges 82, 83, depending on the direction of rotation, will engage with the carrier pin 78, which thereby during continued rotation of the lock cylinder 56 will be displaced in the recess 79 of the central lock body part until the carrier pin 78 strikes an edge of the central lock body part 4, which edge delimits the recess 79. In this way, a rotary motion of the lock cylinder 56 is consequently transferred to a rotary motion of the lock element 73 via the recess 81 of the lock cylinder and the carrier pin 78.

[0026] The cylinder-shaped wall 57 of the lock cylinder 56 has a recess 84 for receiving a not shown lock bar, which recess extends in the axial direction. The cavity 55 in the central lock body part 4, which receives the lock cylinder 56, has a corresponding slot 85 for receiving the lock bar. The lock discs 59, 60 are also provided with recesses, not shown, for receiving the lock bar. The lock bar is arranged to engage with the lock cylinder 56 and the central lock body part 4 via the axial recess 84 and slot 85 in a first position, so as to prevent rotation between them. In a second position, in which the lock discs 59, 60 have been rotated so that their recesses are situated right in front of the slot 85, the lock bar will fall into the recesses of the lock discs and escape from the slot 85, whereupon a rotation of the lock cylinder 56 in relation to the central lock body part 4 is made possible.

[0027] A lock pin, not shown, is movably arranged within a hole 105 in the central lock body part 4. The hole 105 is connected to the slot 85 in the cavity 55 and to the lock element 73. When the lock bar is within the slot 85, it will press the lock pin radially outwards so that the outer end of the lock pin protrudes into a recess 86 arranged in the inner surface of the lock element (see Fig 18). In this position, the lock pin consequently prevents a rotation of the lock element 73 in relation to the central lock body part 4.

[0028] The rear lock body part 5 has a number of holes 87, as can be seen from Fig 16. Rods 88 of hard

metal, see Fig 1, is inserted into these holes 87 in order to make it difficult to bore up the lock unit 1. The rear lock body part 5 also has a number of holes 89, which connects to corresponding holes 90 in the central lock body part 4. Rods of hard metal, not shown, are also inserted into these holes 89, 90 in order to make it difficult to bore up the lock unit 1.

[0029] The key unit 2 shown in Fig 19 and 20 comprises a key casing 91 consisting of two halves 92, 93 joined with each other. In the key casing 91 a first key shaft 94 is rotatably mounted, in the front end of which a key blank 96 is arranged, which key blank 96 protrudes from a front side wall 97 of the key casing 91. A second key shaft 95 is rotatably mounted in the key casing 91 at a right angle in relation to the first key shaft 94. At an upper part of the second key shaft 95, which part protrudes from an upper wall 98 of the key casing 91, a rotation means in the form of a handle is arranged, by means of which the second key shaft 95 can be rotated about its central axis. The key unit furthermore comprises a coupling device in the form of a bevel gearing 100 for transferring a rotary motion from the second key shaft 95 to the first key shaft 94. The gearing 100 comprises a cone-shaped gearing part 101a rotatably connected with the first key shaft 94, via which gear part the first key shaft 94 is mounted at the forward side wall 97 of the key casing 91, and a second cone-shaped gearing part 101b rotatably connected with the second key shaft 95, which gearing part is arranged at the lower end of the second key shaft 95.

[0030] The key unit 2 furthermore comprises a member 102 accessible from the exterior of the key casing, via which member a pulling force or a pushing force can be transferred to the key unit 1 for pulling the key unit 1 backwards and pushing the key unit 1 forwards, respectively, in a direction essentially parallel with the central axis of the first key shaft. In the example shown, the member consists of a pin 102 protruding from the rear side wall 103 of the key casing 91. This pin 102 is concentric with the first key shaft 94 and is rotatably connected to this. The pin 102 has a radially protruding flange 104, which has a shape corresponding to the cartridge flange of the cartridges that are intended for the weapon in question. Consequently, the extractor of the weapon is able to grip hold of the pin 102 via the flange 104, whereby a pulling or pushing force exerted by the extractor can be transferred to the pin 102 for pulling the key unit 1 backwards and pushing the key unit 1 forwards, respectively.

[0031] In Fig 21 the first key shaft 94 is shown in detail with the pin 102 arranged at the rear end of the key shaft. As can be seen from Fig 21, the flange 104 of the pin only extends along a part of the periphery of the pin so that the flange 104 by rotation of the pin 102 can be placed in a releasing position or gripping position in relation to the extractor.

[0032] The locking device shown in Fig 1 and Fig 2 is designed in such a way that the key unit 2 only can be

released from the lock unit 1 when the lock element 73 by means of the lock unit 2 has been rotated to its securing position. Consequently, the key unit 2 is, by the engagement of the key blank 96 with the lock discs 59, 60 in the lock cylinder 56, secured to the lock unit 1 when the lock unit is to be put in place in the breach chamber of the weapon. In this way the key unit 2 can be used as a handle in order to facilitate the handling of the lock unit 1. The rear lock body part 5 has a U-shaped flange 106, which is designed to receive the lower part of the key casing 91 when the key blank 96 is inserted into the lock cylinder 56. In this way a rotation of the key casing 91 in relation to the lock unit 1 is prevented. When the lower part of the lock unit has been inserted some distance into the breach chamber, the extractor of the weapon is pushed forward and the extractor grips hold of the pin 102 protruding from the key casing 91. By means of the extractor, the lock unit 1 can now be pushed forwards to the previously described position, in which the front lock body part 3 is situated within the chamber, whereas the central lock body part 4 is situated within the breach chamber and the front end 6 of the central lock body part 4 abuts against a front section of the breach chamber. In this position the front end 7 of the rear lock body part 5 abuts against a section of the weapon, which surrounds an opening leading to the breach chamber. At this stage of insertion, the blocking balls 19 engage in the slot 16 of the friction body and consequently prevent a displacement of the friction body in relation to the front lock body part 3. When the lock unit 1 thus has been put in place in the weapon, the key blank 96 is rotated by means of the rotation handle 99 so that the lock cylinder 56 will be rotated. The rotation of the lock cylinder 56 is transferred to the lock shaft 9 in that the section of the end wall 58 of the lock cylinder, which section delimits the "ears" 65 of the opening 62 extending through the end wall 58, in connection with the rotation of the lock cylinder 56 engages with and carries the legs 66 of the lock shaft with it. By rotation of the lock cylinder a forth part of a revolution, the lock shaft will be placed in the position shown in Fig 3, in which the blocking balls 19 are received in the recess 20 of the lock shaft, the friction body 10 no longer being blocked from displacement in relation to the front lock body part 3. The friction body 10 then engages with frictional effect with the inside wall of the chamber of the weapon, as previously described.

[0033] The ring-shaped lock element 73 is also effected by said rotation of the lock cylinder 56. The recesses 79, 81 in the central lock body part 4 and lock cylinder 56 are arranged in such a way that one of the edges 82, 83, which delimits the recess 81 of the lock cylinder, will come into engagement with the carrier pin 78 only after a rotation of the lock cylinder 56 an eighth part of a revolution from the original position. During rotation of the lock cylinder 56 a further eighth part of a revolution, the lock element 73 will move along in the rotary motion. When the lock cylinder 56 thus has been rotated a forth

part of a revolution from the original position, the carrier pin 78 will strike one of the edges of the recess 79 in the central lock body part, and the lock heads 76, 77 of the lock element have been placed in the position in which they come into engagement with the inner surface of the breach chamber. In this rotary position of the lock cylinder 56, the lock bar has been placed in its blocking position in the recess 84 in the lock cylinder and in the slot 85 in the central lock body part, the lock pin protruding into the inner recess 86 in the lock element as previously mentioned. Consequently, a rotation of the lock element 73 is prevented by the lock pin as well as the lock bar, by preventing rotation of the lock cylinder 56 the lock bar also prevents rotation of the lock element 73.

[0034] When the lock cylinder 56 is rotated a forth part of a revolution, the lock shaft 9 is consequently rotated a forth part of a revolution at the same time as the lock element 73 is rotated an eighth part of a revolution.

[0035] In this position, when the lock unit 1 is secured in the weapon, the key blank 96 can be released from the lock cylinder 56 and the key unit 2 can consequently be removed. This is carried out in that the extractor is moved backwards and, through its engagement with the pin 102 of the key unit, pulls the key unit 2 backwards out of the lock unit 1. When the key unit 2 has thus been moved out of engagement with the lock unit 1, it is released from the extractor in the same way as a cartridge extracted by the extractor is released from it.

[0036] In this locking position, the lock heads 76, 77 consequently prevent an unduly removal of the lock unit 1 from the weapon. Due to the ring-shape of the lock element, it is very difficult to get hold of the lock element 73 for instance by boring attempts from behind via the rear lock body part 5. A boring up of the lock unit 1 is obstructed by the hard metal rods 88 arranged in the central and rear lock body part 4, 5. As mentioned above, the friction body 10 now engages with frictional effect with the inside wall of the chamber of the weapon. Since the friction body 10 furthermore is displaceable in relation to the front lock body part 3, any attempt to pull out the lock unit from behind or push out the lock unit from the front will result in that the front lock body part 3 will be displaced in relation to the friction body 10. The blocking elements 23 will then be pressed forwards along the cone-shaped surface 22, 33 and they will be pressed radially outwards against the inner surface of the chamber by this cone-shaped surface. In case of a further displacement backwards of the front lock body part 3, the cutting edges 29 of the blocking elements will cut into the inside wall of the chamber and obstruct the removal of the lock unit 1. Since each cutting edge 29 will come into engagement with the surface of the wall along a section of the wall surface that has a main extension in a direction being essentially perpendicular to the axial direction of the lock unit, the blocking elements 23 will obtain a very good grip in the wall, wherefor it will be extremely difficult to remove the lock unit 1. If the lock unit is subjected to a very strong pulling/pushing force,

the cutting edges 29 will destroy the inside wall of the chamber by planning and will make the weapon unusable. The friction body 10 and the blocking elements 23 consequently constitute a destructing secondary locking function, which comes into operation in case someone manages to manipulate the lock unit 1 so that the securing effect of the lock element 73 ceases.

[0037] If someone manages to bore up the lock cylinder 56, the previously described blocking function of the lock shaft 9 comes into operation. The metal balls 35, 48 of the cone and the lock shaft, respectively, contribute in obstructing a boring up of the lock unit 1.

[0038] When the lock unit 1 is to be removed, the key unit 2 is placed in front of the lock unit 1 with the key casing 91 abutting against the U-shaped flange 106 and the key blank 96 is inserted into the key hole. The extractor is thereafter moved forwards against the pin 102 of the key unit 2. The lock cylinder 56 can now be rotated back a forth part of a revolution to the original position.

The lock shaft 9 will then be rotated a forth part of a revolution, and the blocking balls 19 will be pressed outwards so that they come into engagement with the slot 16 in the friction body. The blocking balls 19 now prevent a displacement of the friction body 10 in relation to the front lock body part 3, and therefor the lock unit 1 can be pulled backwards without the blocking elements 23 being effected. At the same time, the ring-shaped lock element 73 will in the way described above be rotated an eighth part of a revolution and end up in the original position, in which the lock unit 1 is free to be pulled out of the breach chamber. The extractor is now moved backwards and pulls the lock unit 1 out of the breach chamber by its engagement with the pin 102. By rotation of the rotation handle 99 of the key unit, the pin 102 is now rotated some distance so that the flange 104 of the pin is moved to the position in relation to the extractor in which the flange 104 is released from the extractor. Thereafter, the locking device thus released can be lifted away.

[0039] A blocking device for preventing a displacement of the lock shaft could, as an alternative to the shown example, be arranged in a space in the lock shaft and by means of a spring element arranged in the space preloadedly abut against the inside wall of a lock shaft receiving space in the locking device. The blocking device could in this case be arranged to, when the lock shaft has been displaced a certain distance, come into engagement with a slot or recess arranged in the lock shaft receiving space so as to prevent a further displacement of the lock shaft.

[0040] The ring-shaped lock element 73 comprised in the shown example could also be included in a locking device lacking the lock parts described in connection with Fig 3-11. Such a locking device could of course also be designed to be secured at another object than a weapon. Furthermore, the key unit 2 described above could be adapted for use with other types of locking devices than the one according to the shown example.

Claims

1. A locking device to be secured in a weapon, comprising a lock body (3-5), a lock cylinder (56) rotatably arranged in the lock body (3-5), and a locking means, which locking means has a friction body (10) displaceably arranged in relation to the lock body (3-5) and insertable into the chamber or barrel of the weapon, which friction body is designed to engage with an inside wall of the chamber/barrel with frictional effect at the insertion into the chamber/barrel, and at least one blocking element (23) arranged to be moved into engagement with the inside wall of the chamber/barrel in case of a mutual displacement between the friction body (10) and the lock body (3-5), the locking device furthermore comprising a blocking member (19), which by means of the lock cylinder (56) is movable between a blocking position, in which the blocking member (19) engages with the friction body (10) and prevents longitudinal displacement of the friction body (10) in relation to the lock body (3-5), and a free position, in which the blocking member (19) does not engage with the friction body (10) and allows longitudinal displacement of the friction body (10) in relation to the lock body (3-5), **characterized in that** the locking device in addition to the first locking means comprises a second locking means (73), which by means of the lock cylinder (56) is movable between a first position, corresponding to the blocking position of the blocking member, in which the second locking means (73) allows insertion of the locking device into and removal of the same out of a space in the weapon located adjacent to the chamber/barrel, and a second position, corresponding to the free position of the blocking member, in which the second locking means, when the locking device has been put in place in the weapon with the lock body (3-5) extending into the chamber/barrel, is arranged to engage in said space for securing of the locking device in the weapon.
2. A locking device according to claim 1, **characterized in that** the lock cylinder (56) comprises a cylinder-shaped wall (57) and that a means is arranged to transfer a rotary motion of the lock cylinder (56) into a movement of the second locking means (73) via the envelope surface of the cylinder-shaped wall.
3. A locking device according to claim 2, **characterized in that** the means comprises a recess (81) arranged in the envelope surface of the cylinder-shaped wall (57).
4. A locking device according to claim 3, **characterized in that** the second locking means (73) is connected with a carrier member (78) extending down into the recess (81) in the cylinder-shaped wall (57), the carrier member (78) being arranged to be displaced in connection with a rotation of the lock cylinder (56), by an edge (82, 83) of the cylinder-shaped wall (57), which edge delimits the recess (81).
5. A locking device according to claim 4, **characterized in that** the carrier member consists of a pin (78), which is attached to the second locking means.
6. A locking device according to any of claims 1-5, **characterized in that** the second locking means comprises a ring-shaped lock element (73) rotatably mounted to the lock body (3-5), which lock element has at least one section (76, 77) which by rotation of the lock element (73) can be brought into or out of engagement with a section of said space.
7. A locking device according to claim 6, **characterized in that** the lock element (73) is concentric with the lock cylinder (56) and is mounted at a section (80) of the lock body (3-5), which section surrounds the lock cylinder (56).
8. A locking device according to any of claims 1-7 **characterized in that** the second locking means when rotatably arranged ring-shaped lock element (73) has at least one section (76, 77), which by rotation of the lock element (73) can be brought into or out of a securing engagement with a section of said space.
9. A locking device according to claim 8, **characterized in that** the lock element (73) is concentric With the lock cylinder (56) and is mounted to a section (80) of the locking device, which section surrounds the lock cylinder (56).
10. A locking device according to claim 9, **characterized in that** the lock cylinder (56) has a cylinder-shaped wall (57), and that a rotary motion of the lock cylinder (56) is transferred into a rotary motion of the lock element (73) via a recess (81) arranged in the envelope surface of the cylinder-shaped wall (57).
11. A locking device according to claim 10, **characterized in that** the lock element (73) is connected with a carrier member (78) extending down into the recess (81) in the cylinder-shaped wall (57), the carrier member (78) being arranged to be displaced, in connection with rotation of the lock cylinder (56), by an edge (82, 83) of the cylinder-shaped wall (57), which edge delimits the recess (81).
12. A locking device according to claim 11, **character-**

ized in that the carrier member consists of a pin (78), which is attached to the lock element (73).

13. A locking device according to any of claims 8-12, **characterized in that** a cavity (55), which receives the lock cylinder (56), has a slot (85) for receiving a lock bar, which slot extends in an axial direction, that a lock pin is movably arranged within a space (105) in the locking device, which space (105) is connected to the slot (85) of the lock body and to the lock element (73), the lock pin being displaceable by the lock bar into engagement with a recess (86), which recess is arranged in the lock element (73), so as to prevent rotation of the lock element (73) when the lock bar is inside the slot (85).
14. A locking device according to any of claims 1-13, the lock cylinder (56) comprising a cylinder-shaped wall (57), an end wall (58) arranged at one end of the lock cylinder (56) and lock discs (59, 60) rotatably arranged inside the cylinder-shaped wall (57), the locking device further comprising a lock shaft (9) arranged in the lock body (3-5), which lock shaft (9) is rotatable around its central axis in relation to the lock body (3-5) by means of the lock cylinder (56), **characterized in that** the lock shaft (9) is arranged, under the action of a first spring element (39), to abut against one of the lock discs (59) via an opening (62) provided in the end wall (58) of the lock cylinder (56) so as to be displaceable towards the lock cylinder (56) in case the supporting action from said lock disc (59) ceases, and that the locking device further comprises at least one movably arranged blocking device (41), which under the action of a second spring element (43), when a displacement of the lock shaft (9) towards the lock cylinder (56) takes place, is arranged to be displaced to a position in which the blocking device (41) prevents further displacement of the lock shaft (9) towards or away from the lock cylinder (56).
15. A locking device according to claim 14, **characterized in that** blocking device consists of a pin (41).
16. A locking device according to claim 14 or 15, **characterized in that** the blocking device (41) in its position of blocking the movement of the lock shaft (9) engages with a slot (46) or recess arranged in the lock shaft (9).
17. A locking device according to claim 16, **characterized in that** the blocking device (41) is preloaded against the lock shaft (9) by means of the second spring element (43).
18. A locking device according to claim 14 or 15, **characterized in that** the blocking device (41) is arranged in the lock shaft (9) and in the second posi-

tion engages with a slot or recess arranged in a space in the locking device, which space receives the lock shaft (9).

19. A locking device according to claim 18, **characterized in that** the blocking device (41) is preloaded against the inner wall of the space in the locking device by means of the second spring element.
20. A locking device according to any of claims 14-19, **characterized in that** the friction body (10) is displaceable in the longitudinal direction of the lock shaft, and that the blocking member (19) is actuable by the lock shaft (9), which blocking member (19) by rotation of the lock shaft (9) is manoeuvrable between a first rotary position, in which the blocking member (19) engages with the friction body (10) and prevents a displacement of the friction body (10) in the longitudinal direction of the lock shaft, and a second rotary position, in which the friction body (10) is displaceably movable in the longitudinal direction of the lock shaft, the lock shaft (9) in the second position being prevented from affecting the blocking member (19).
21. A locking device according to any of claims 1-20, wherein said at least one blocking element (23) is provided with a cutting edge (29), said blocking element (23) being arranged to be moved, during mutual displacement between the friction body and the lock body (3, 10), from a first position, in which the cutting edge (29) of the blocking element does not engage with the inside wall of the chamber/barrel, to a second position, in which the cutting edge (29) of the blocking element engages with the wall, **characterized in that** the cutting edge (29) has a main extension in a direction forming an angle with the axial direction of the locking device and is arranged to come into engagement with the surface of the wall along a section of the wall surface that has a main extension in a direction forming an angle with the axial direction of the locking device.
22. A locking device according to claim 21, **characterized in that** the blocking element (23) has a surface (29a) situated below the cutting edge (29), from which surface the cutting edge (29) protrudes in the axial direction of the locking device, which surface (29a) is designed to receive material cut by the cutting edge (29).
23. A locking device according to claim 22, **characterized in that** the surface situated below the cutting edge (29) consists of a recess (29a) in the blocking element (23), which recess (29a) extends along and below the cutting edge (29).
24. A locking device according to any of claims 21-23,

characterized in that the blocking element (23) has a recess (30) for receiving at least a ring-shaped lock element, by means of which the blocking element (23) is secured to the locking device.

Patentansprüche

1. Sperrvorrichtung zur Befestigung in einer Waffe, umfassend einen Schlosskörper (3 - 5), einen Schlosszylinder (56), der drehbar im Schlosskörper (3 - 5) angeordnet ist, und ein Sperrmittel, wobei das Sperrmittel einen Reibkörper (10) aufweist, der in Bezug auf den Schlosskörper (3 - 5) verschiebbar angeordnet ist und in die Kammer oder den Lauf der Waffe einsetzbar ist, wobei der Reibkörper dazu gestaltet ist, beim Einsetzen in die Kammer/den Lauf mit einer Reibungswirkung mit einer Innenwand der Kammer/des Laufs einzugreifen, und zumindest ein Blockierelement (23), das angeordnet ist, um im Fall einer gegenseitigen Verschiebung zwischen dem Reibkörper (10) und dem Schlosskörper (3 - 5) in einen Eingriff mit der Innenwand der Kammer/des Laufs bewegt zu werden, wobei die Sperrvorrichtung ferner einen Blockierteil (19) umfasst, der durch den Schlosszylinder (56) zwischen einer Blockierstellung; in der der Blockierteil (19) mit dem Reibkörper (10) eingreift und eine Längsverschiebung des Reibkörpers (10) in Bezug auf den Schlosskörper (3 - 5) verhindert, und einer freien Stellung beweglich ist, in der der Blockierteil (19) nicht mit dem Reibkörper (10) eingreift und eine Längsverschiebung des Reibkörpers (10) in Bezug auf den Schlosskörper (3 - 5) gestattet, **dadurch gekennzeichnet, dass** die Sperrvorrichtung zusätzlich zum ersten Sperrmittel ein zweites Sperrmittel (73) umfasst, das durch den Schlosszylinder (56) zwischen einer ersten, der Blockierposition des Blockierteils entsprechenden Stellung, in der das zweite Sperrmittel (73) das Einsetzen der Sperrvorrichtung in einen neben der Kammer/dem Lauf gelegenen Raum der Waffe und ihr Entfernen daraus gestattet, und einer zweiten, der freien Stellung des Blockierteils entsprechenden Stellung beweglich ist, in der das zweite Sperrmittel dann, wenn die Sperrvorrichtung mit sich in die Kammer/den Lauf erstreckendem Schlosskörper (3 - 5) an ihrer Stelle in der Waffe angeordnet wurde, so angeordnet ist, daß es in den Raum eingreift, um die Sperrvorrichtung in der Waffe zu befestigen.
2. Sperrvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** der Schlosszylinder (56) eine zylinderförmige Wand (57) umfasst, und dass ein Mittel angeordnet ist, um eine Drehbewegung des Schlosszylinders (56) über die Hülloberfläche der zylinderförmigen Wand (57) in eine Bewegung des zweiten Sperrmittels (73) zu übertragen.

3. Sperrvorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** das Mittel eine Aussparung (81) umfasst, die in der Hülloberfläche der zylinderförmigen Wand (57) angeordnet ist.
4. Sperrvorrichtung nach Anspruch 3, **dadurch gekennzeichnet, dass** das zweite Sperrmittel (73) mit einem Trägerteil (78) verbunden ist, der sich in die Aussparung (81) in der zylinderförmigen Wand (57) hinab erstreckt, wobei der Trägerteil (78) angeordnet ist, um in Verbindung mit einer Drehung des Schlosszylinders (56) durch einen Rand (82, 83) der zylinderförmigen Wand (57) verschoben zu werden, welcher Rand die Aussparung (81) begrenzt.
5. Sperrvorrichtung nach Anspruch 4, **dadurch gekennzeichnet, dass** der Trägerteil aus einem Stift (78) besteht, der am zweiten Sperrmittel angebracht ist.
6. Sperrvorrichtung nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** das zweite Sperrmittel ein ringförmiges Schloßelement (73) umfasst, das drehbar am Schlosskörper (3 - 5) angebracht ist, wobei das Schloßelement zumindest einen Abschnitt (76, 77) aufweist, der durch eine Drehung des Schloßelements (73) mit einem Abschnitt des Raums in Eingriff gebracht oder daraus gelöst werden kann.
7. Sperrvorrichtung nach Anspruch 6, **dadurch gekennzeichnet, dass** das Schloßelement (73) mit dem Schlosszylinder (56) konzentrisch ist und an einem Abschnitt (80) des Schlosskörpers (3 - 5) angebracht ist, welcher Abschnitt den Schlosszylinder (56) umgibt.
8. Sperrvorrichtung nach einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet, dass** das drehbar angeordnete ringförmige Schloßelement (73) des zweiten Sperrmittels zumindest einen Abschnitt (76, 77) aufweist, der durch Drehung des Schloßelements (73) mit einem Abschnitt des Raums in einen befestigenden Eingriff gebracht werden oder daraus gelöst werden kann.
9. Sperrvorrichtung nach Anspruch 8, **dadurch gekennzeichnet, dass** das Schloßelement (73) mit dem Schlosszylinder (56) konzentrisch ist und an einem Abschnitt (80) der Sperrvorrichtung angebracht ist, welcher Abschnitt den Schlosszylinder (56) umgibt.
10. Sperrvorrichtung nach Anspruch 9, **dadurch gekennzeichnet, dass** der Schlosszylinder (56) eine zylinderförmige Wand (57) aufweist, und dass eine Drehbewegung des Schlosszylinders (56) über ei-

ne in der Hülloberfläche der zylinderförmigen Wand (57) angeordnete Aussparung (81) in eine Drehbewegung des Schlosselements (73) übertragen wird.

11. Sperrvorrichtung nach Anspruch 10, **dadurch gekennzeichnet, dass** das Schlosselement (73) mit einem Trägerteil (78) verbunden ist, der sich in die Aussparung (81) in der zylinderförmigen Wand (57) hinab erstreckt, wobei der Trägerteil (78) angeordnet ist, um in Verbindung mit einer Drehung des Schlosszylinders (56) durch einen Rand (82, 83) der zylinderförmigen Wand (57) verschoben zu werden, welcher Rand die Aussparung (81) begrenzt. 5
12. Sperrvorrichtung nach Anspruch 11, **dadurch gekennzeichnet, dass** der Trägerteil aus einem Stift (78) besteht, der am Schlosselement (73) angebracht ist. 10
13. Sperrvorrichtung nach einem der Ansprüche 8 bis 12, **dadurch gekennzeichnet, dass** ein Hohlraum (55), der den Schlosszylinder (56) aufnimmt, einen Schlitz (85) zum Aufnehmen eines Riegels aufweist, welcher Schlitz sich in einer Achsenrichtung erstreckt, dass ein Schlossstift beweglich im Inneren eines Raums (105) in der Sperrvorrichtung angeordnet ist, welcher Raum (105) mit dem Schlitz (85) des Schlosskörpers und dem Schlosselement (73) verbunden ist, wobei der Schlossstift durch den Riegel in einen Eingriff mit einer Aussparung (86) verschiebbar ist, welche Aussparung im Schlosselement (73) angeordnet ist, um eine Drehung des Schlosselements (73) zu verhindern, wenn sich der Riegel im Inneren des Schlitzes (85) befindet. 15
14. Sperrvorrichtung nach einem der Ansprüche 1 bis 13, wobei der Schlosszylinder (56) eine zylinderförmige Wand (57), eine an einem Ende des Schlosszylinders (56) angeordnete Endwand (58), und drehbar im Inneren der zylinderförmigen Wand (57) angeordnete Schlossscheiben (59, 60) umfasst, wobei die Sperrvorrichtung ferner einen im Schlosskörper (3 - 5) angeordneten Schlossschaft (9) umfasst, welcher Schlossschaft (9) durch den Schlosszylinder (56) in Bezug auf den Schlosskörper (3 - 5) um seine Mittelachse drehbar ist, **dadurch gekennzeichnet, dass** der Schlossschaft (9) unter der Wirkung eines ersten Federelements (39) angeordnet ist, um über eine in der Endwand (58) des Schlosszylinders (56) bereitgestellte Öffnung (62) gegen eine der Sperrscheiben (59) zu stoßen, um zum Schlosszylinder (56) hin verschiebbar zu sein, falls die Haltewirkung von der Schlossscheibe (59) endet, und dass die Sperrvorrichtung ferner zumindest eine beweglich angeordnete Blockiervorrichtung (41) umfasst, die unter der Wirkung eines zweiten Federelements (43) dann, wenn eine Ver- 20

schiebung des Schlossschafts (9) zum Schlosszylinder (56) hin stattfindet, so angeordnet ist, dass sie in eine Stellung verschoben wird, in der die Blockiervorrichtung (41) eine weitere Verschiebung des Schlossschafts (9) zum Sperrzylinder (56) hin oder davon weg verhindert.

15. Sperrvorrichtung nach Anspruch 14, **dadurch gekennzeichnet, dass** die Blockiervorrichtung aus einem Stift (41) besteht. 25
16. Sperrvorrichtung nach Anspruch 14 oder 15, **dadurch gekennzeichnet, dass** die Blockiervorrichtung (41) in ihrer Stellung des Blockierens der Bewegung des Schlossschafts (9) mit einem Schlitz (46) oder einer Vertiefung eingreift, der/die im Schlossschaft (9) angeordnet ist. 30
17. Sperrvorrichtung nach Anspruch 16, **dadurch gekennzeichnet, dass** die Blockiervorrichtung (41) durch das zweite Federelement (43) gegen den Schlossschaft (6) vorgespannt ist. 35
18. Sperrvorrichtung nach Anspruch 14 oder 15, **dadurch gekennzeichnet, dass** die Blockiervorrichtung (41) im Schlossschaft (9) angeordnet ist und in der zweiten Stellung mit einem Schlitz oder einer Vertiefung eingreift, der/die in einem Raum in der Sperrvorrichtung angeordnet ist, welcher Raum den Schlossschaft (9) aufnimmt. 40
19. Sperrvorrichtung nach Anspruch 18, **dadurch gekennzeichnet, dass** die Blockiervorrichtung (41) durch das zweite Federelement gegen die Innenwand des Raums in der Sperrvorrichtung vorgespannt wird. 45
20. Sperrvorrichtung nach einem der Ansprüche 14 bis 19, **dadurch gekennzeichnet, dass** der Reibkörper (10) in der Längsrichtung des Schlossschafts verschiebbar ist, und dass der Blockierteil (19) durch den Schlossschaft (9) betätigbar ist, welcher Blockierteil (19) durch eine Drehung des Schlossschafts (9) zwischen einer ersten Drehstellung, in der der Blockierteil (19) mit dem Reibkörper (10) eingreift und eine Verschiebung des Reibkörpers (10) in der Längsrichtung des Schlossschafts verhindert, und einer zweiten Drehstellung bewegbar ist, in der der Reibkörper (10) verschiebbar in der Längsrichtung des Schlossschafts beweglich ist, wobei der Schlossschaft (9) in der zweiten Stellung daran gehindert wird, den Blockierteil (19) zu beeinflussen. 50
21. Sperrvorrichtung nach einem der Ansprüche 1 bis 20, wobei das zumindest eine Blockierelement (23) mit einer Schneidkante (29) versehen ist, wobei das Blockierelement (23) angeordnet ist, um während 55

der gegenseitigen Verschiebung zwischen dem Reibkörper und dem Schloßkörper (3, 10) von einer ersten Stellung, in der die Schneidkante (29) des Blockierelements nicht mit der Innenwand der Kammer/des Laufs eingreift, in eine zweite Stellung bewegt zu werden, in der die Schneidkante (29) des Blockierelements mit der Wand eingreift, **dadurch gekennzeichnet, dass** die Schneidkante (29) eine Hauptausschneidung in einer Richtung aufweist, die einen Winkel mit der Achsenrichtung der Sperrvorrichtung bildet, und angeordnet ist, um entlang eines Abschnitts der Wandoberfläche, der eine Hauptausschneidung in einer Richtung aufweist, die einen Winkel mit der Achsenrichtung der Sperrvorrichtung bildet, in einen Eingriff mit der Oberfläche der Wand zu gelangen.

22. Sperrvorrichtung nach Anspruch 21, **dadurch gekennzeichnet, dass** das Blockierelement (23) eine unter der Schneidkante (29) gelegene Oberfläche (29a) aufweist, von welcher Oberfläche die Schneidkante (29) in der Achsenrichtung der Sperrvorrichtung vorspringt, welche Oberfläche (29a) dazu gestaltet ist, durch die Schneidkante (29) ausgeschnittenes Material aufzunehmen.
23. Sperrvorrichtung nach Anspruch 22, **dadurch gekennzeichnet, dass** die unter der Schneidkante (29) gelegene Oberfläche aus einer Vertiefung (29a) im Blockierelement (23) besteht, welche Vertiefung (29a) sich entlang und unter der Schneidkante (29) erstreckt.
24. Sperrvorrichtung nach einem der Ansprüche 21 bis 23, **dadurch gekennzeichnet, dass** das Blockierelement (23) eine Vertiefung (30) zum Aufnehmen zumindest eines ringförmigen Schlosselements aufweist, wodurch das Blockierelement (23) an der Sperrvorrichtung befestigt wird.

Revendications

1. Dispositif de verrouillage destiné à être fixé dans une arme, comprenant un corps de verrouillage (3 à 5), un cylindre de verrouillage (56) disposé dans le corps de verrouillage (3 à 5) de façon à pouvoir tourner, et des moyens de blocage, ces moyens de blocage comprenant un corps de friction (10) disposé de façon mobile par rapport au corps de verrouillage (3 à 5) et susceptible d'être introduit dans la culasse ou le canon de l'arme, ce corps de friction étant conçu de façon à se mettre en engagement avec une paroi interne de la culasse/du canon par un effet de friction lors de l'insertion à l'intérieur de la culasse/du canon, et au moins un élément de blocage (23) disposé de façon à pouvoir se déplacer pour venir en engagement avec la paroi interne de

la culasse/du canon dans le cas d'un déplacement mutuel entre le corps de friction (10) et le corps de verrouillage (3 à 5), le dispositif de verrouillage comprenant par ailleurs un élément de blocage (19) qui, au moyen du cylindre de verrouillage (56) peut se déplacer entre une position de blocage dans laquelle l'élément de blocage (19) se met en prise avec le corps de friction (10) et empêche le déplacement longitudinal du corps de friction (10) par rapport au corps de verrouillage (3 à 5), et une position libre dans laquelle l'élément de blocage (19) ne se met pas en prise avec le corps de friction (10) et permet le déplacement longitudinal du corps de friction (10) par rapport au corps de verrouillage (3 à 5), **caractérisé en ce que** le dispositif de verrouillage, en plus des premiers moyens de blocage comprend des seconds moyens de blocage (73) qui, au moyen du cylindre de verrouillage (56) peuvent se déplacer entre une première position qui correspond à la position de blocage de l'élément de blocage dans laquelle les seconds moyens de blocage (73) permettent l'insertion et le retrait du dispositif de verrouillage dans et hors d'un espace dans l'arme adjacent à la culasse/au canon, et une seconde position qui correspond à la position libre de l'élément de blocage dans laquelle les seconds moyens de blocage, lorsque le dispositif de verrouillage a été mis en place à l'intérieur de l'arme avec le corps de verrouillage (3 à 5) s'étendant à l'intérieur de la culasse/du canon, sont disposés de façon à se mettre en prise dans ledit espace afin d'assurer le dispositif de verrouillage en position dans l'arme.

2. Dispositif de verrouillage selon la revendication 1, **caractérisé en ce que** le cylindre de verrouillage (56) comprend une paroi en forme de cylindre (57) et **en ce que** des moyens sont prévus pour traduire un mouvement rotatif du cylindre de verrouillage (56) en un mouvement des seconds moyens de blocage (73) par le biais de la surface enveloppante de la paroi en forme de cylindre.
3. Dispositif de verrouillage selon la revendication 2, **caractérisé en ce que** les moyens comprennent un évidement (81) prévu dans la surface enveloppante de la paroi en forme de cylindre (57).
4. Dispositif de verrouillage selon la revendication 3, **caractérisé en ce que** les seconds moyens de blocage (73) sont reliés à un élément porteur (78) qui s'étend vers le bas à l'intérieur de l'évidement (81) dans la paroi en forme de cylindre (57), l'élément porteur (78) étant disposé de façon à être amené à se déplacer, en relation avec une rotation du cylindre de verrouillage (56), par un bord (82, 83) de la paroi en forme de cylindre (57), ce bord délimitant l'évidement (81).

5. Dispositif de verrouillage selon la revendication 4, **caractérisé en ce que** l'élément porteur se compose d'une goupille (78), qui est fixée aux seconds moyens de blocage.
6. Dispositif de verrouillage selon l'une quelconque des revendications 1 à 5, **caractérisé en ce que** les seconds moyens de blocage comprennent un élément de verrouillage de la forme d'un anneau (73) qui est fixé au corps de verrouillage (3 à 5) de façon à pouvoir tourner, cet élément de verrouillage présentant au moins une section (76, 77) qui peut être amenée, par une rotation de l'élément de verrouillage (73), à venir en prise avec ou à sortir de prise d'avec une section dudit espace.
7. Dispositif de verrouillage selon la revendication 6, **caractérisé en ce que** l'élément de verrouillage (73) est concentrique avec le cylindre de verrouillage (56) et qu'il est monté au niveau d'une section (80) du corps de verrouillage (3 à 5), section qui entoure le cylindre de verrouillage (56).
8. Dispositif de verrouillage selon l'une quelconque des revendications 1 à 7, **caractérisé en ce que** les seconds moyens de blocage (73) dont l'élément de verrouillage de forme annulaire (73) est agencé de manière rotative, présente au moins une section (76, 77), qui peut être amenée, par une rotation de l'élément de verrouillage (73), à venir en prise avec ou à sortir de prise d'avec une section dudit espace.
9. Dispositif de verrouillage selon la revendication 8, **caractérisé en ce que** l'élément de verrouillage (73) est concentrique avec le cylindre de verrouillage (56) et qu'il est monté sur une section (80) du dispositif de verrouillage, section qui entoure le cylindre de verrouillage (56).
10. Dispositif de verrouillage selon la revendication 9, **caractérisé en ce que** le cylindre de verrouillage (56) a une paroi de la forme d'un cylindre (57), et **en ce qu'un** mouvement rotatif du cylindre de verrouillage (56) est traduit en un mouvement rotatif de l'élément de verrouillage (73) par le biais d'un évidement (81) situé dans la surface enveloppante de la paroi en forme de cylindre (57).
11. Dispositif de verrouillage selon la revendication 10, **caractérisé en ce que** l'élément de verrouillage (73) est relié à un élément porteur (78) qui s'étend vers le bas à l'intérieur de l'évidement (81) dans la paroi en forme de cylindre (57), l'élément porteur (78) étant disposé de façon à être amené à se déplacer, en relation avec une rotation du cylindre de verrouillage (56), par un bord (82, 83) de la paroi en forme de cylindre (57), ce bord délimitant l'évidement (81).
12. Dispositif de verrouillage selon la revendication 11, **caractérisé en ce que** l'élément porteur se compose d'une goupille (11), qui est fixée à l'élément de verrouillage (73).
13. Dispositif de verrouillage selon l'une quelconque des revendications 8 à 12, **caractérisé en ce qu'une** cavité (55) qui reçoit le cylindre de verrouillage (56), comporte une fente (85) pour recevoir une barre de blocage, cette fente s'étendant dans une direction axiale, **en ce qu'un** axe de verrouillage est disposé de façon à pouvoir se déplacer à l'intérieur d'un espace (105) dans le dispositif de verrouillage, cet espace (105) étant relié à la fente (85) du corps de verrouillage et à l'élément de verrouillage (73), l'axe de verrouillage pouvant être amené, par la barre de verrouillage, à se déplacer pour venir en prise avec un évidement (86), cet évidement étant prévu dans l'élément de verrouillage (73), de façon à empêcher la rotation de l'élément de verrouillage (73) lorsque la barre de verrouillage se trouve à l'intérieur de la fente (85).
14. Dispositif de verrouillage selon l'une quelconque des revendications 1 à 13, le cylindre de verrouillage (56) comprenant une paroi de la forme d'un cylindre (57), une paroi d'extrémité (58) disposée à une extrémité du cylindre de verrouillage (56) et des disques de verrouillage (59, 60) qui sont disposés pour une rotation à l'intérieur de la paroi en forme de cylindre (57), le dispositif de verrouillage comprenant en outre une tige de verrouillage (9) disposée dans le corps de verrouillage (3 à 5), cette tige de verrouillage (9) étant susceptible de tourner autour de son axe central en relation avec le corps de verrouillage (3 à 5) au moyen du cylindre de verrouillage (56), **caractérisé en ce que** la tige de verrouillage (9) est disposée pour, sous l'action d'un premier élément à ressort (39), venir buter contre un des disques de verrouillage (59) au travers d'une ouverture (62) prévue dans la paroi d'extrémité (58) du cylindre de verrouillage (56) de façon à pouvoir se déplacer vers le cylindre de verrouillage (56) au cas où l'action de soutien dudit disque de verrouillage (59) viendrait à cesser, et **en ce que** le dispositif de verrouillage comprend en outre au moins un dispositif de blocage disposé de façon à pouvoir se déplacer (41) qui, sous l'action d'un second élément à ressort (43), lorsqu'un déplacement de la tige de verrouillage (9) vers le cylindre de verrouillage (56) se produit, est disposé de façon à pouvoir se déplacer vers une position dans laquelle le dispositif de blocage (41) empêche la tige de verrouillage de se déplacer plus avant (9) en se rapprochant ou en s'éloignant du cylindre de verrouillage (56).
15. Dispositif de verrouillage selon la revendication 14, **caractérisé en ce que** l'élément de blocage se

compose d'un axe (41).

16. Dispositif de verrouillage selon la revendication 14 ou 15, **caractérisé en ce que** l'élément de blocage (41), lorsqu'il est dans la position où il bloque le mouvement de la tige de verrouillage (9), vient en prise avec une fente (46) ou un évidement prévu(e) dans la tige de verrouillage (9). 5
17. Dispositif de verrouillage selon la revendication 16, **caractérisé en ce que** l'élément de blocage (41) est pré-chargé contre la tige de verrouillage (9) au moyen du second élément à ressort (43). 10
18. Dispositif de verrouillage selon la revendication 14 ou 15, **caractérisé en ce que** l'élément de blocage (41) est disposé dans la tige de verrouillage (9) et **en ce que**, au niveau de la seconde position, il vient en prise avec une fente ou un évidement prévu(e) dans un espace dans le dispositif de verrouillage, cet espace recevant la tige de verrouillage (9). 15 20
19. Dispositif de verrouillage selon la revendication 18, **caractérisé en ce que** l'élément de blocage (41) est pré-chargé contre la paroi interne de l'espace dans le dispositif de verrouillage au moyen du second élément à ressort. 25
20. Dispositif de verrouillage selon l'une quelconque des revendications 14 à 19, **caractérisé en ce que** le corps de friction (10) peut se déplacer dans la direction longitudinale de la tige de verrouillage, et **en ce que** l'élément de blocage (19) peut être actionné par la tige de verrouillage (9), cet élément de blocage (19) pouvant, par la rotation de la tige de verrouillage (9), être manoeuvré entre une première position rotative dans laquelle l'élément de blocage (19) vient en prise avec le corps de friction (10) et empêche un déplacement du corps de friction (10) dans la direction longitudinale de la tige de verrouillage, et une seconde position rotative dans laquelle le corps de friction (10) peut être amené à se déplacer dans la direction longitudinale de la tige de verrouillage, la tige de verrouillage (9) au niveau de la seconde position étant empêchée d'affecter l'élément de blocage (19). 30 35 40 45
21. Dispositif de verrouillage selon l'une quelconque des revendications 1 à 20, dans lequel ledit au moins un élément de blocage (23) est pourvu d'un bord de coupe (29), ledit élément de blocage (23) étant disposé de façon à pouvoir se déplacer, pendant le déplacement réciproque entre le corps de friction et le corps de verrouillage (3, 10), entre une première position dans laquelle le bord de coupe (29) de l'élément de blocage ne vient pas en prise avec la paroi interne de la culasse/du canon et une seconde position dans laquelle le bord de coupe 50 55

(29) de l'élément de blocage vient en prise avec la paroi, **caractérisé en ce que** le bord de coupe (29) présente un prolongement principal dans une direction formant un angle avec la direction axiale du dispositif de verrouillage et est disposé de façon à venir en prise avec la surface de la paroi le long d'une section de la surface de paroi qui comporte un prolongement principal dans une direction formant un angle avec la direction axiale du dispositif de verrouillage.

22. Dispositif de verrouillage selon la revendication 21, **caractérisé en ce que** l'élément de blocage (23) présente une surface (29a) qui est située en dessous du bord de coupe (29), surface à partir de laquelle le bord de coupe (29) fait saillie dans la direction axiale du dispositif de verrouillage, cette surface (29a) étant adaptée pour recevoir un matériau coupé par le bord de coupe (29).
23. Dispositif de verrouillage selon la revendication 22, **caractérisé en ce que** la surface située en dessous du bord de coupe (29) comporte un évidement (29a) dans l'élément de blocage (23), cet évidement (29a) s'étendant le long et en dessous du bord de coupe (29).
24. Dispositif de verrouillage selon l'une quelconque des revendications 21 à 23, **caractérisé en ce que** l'élément de blocage (23) comporte un évidement (30) pour recevoir au moins un élément de verrouillage, de la forme d'un anneau, au moyen duquel l'élément de blocage (23) est fixé au dispositif de verrouillage.











